



United States  
Department of  
Agriculture  
Forest Service

# FOREST PEST MANAGEMENT

## Technology Update

Southern Region, USDA Forest Service, 1720 Peachtree Rd, N. W. Atlanta, Ga. 30367

### Southern Pine Beetle Fact Sheet Number 30

#### SAMTAM: SAWMILL ANALYSIS MODEL FOR GREEN AND BEETLE-KILLED SOUTHERN PINE TIMBER

How much profit or loss will a sawmill experience in processing a log of given diameter and grade? How is this profit or loss affected by state of deterioration resulting from beetle infestation and fungal development?

We can prove that there is value remaining in beetle-killed timber, but mill managers need information that is specific to their mills. SAMTAM and SAMTAM II computer programs were developed to help provide this information. SAMTAM II considers both green and beetle-killed logs. Both models provide two quality control checks (sawing variation and log overlength), three recovery efficiencies (LRF, overrun, and percentages), and two profit or loss analyses (actual log data and smoothed predictions).

The models are written to estimate the volume of wood residues generated from each log. These estimates are based on the actual lumber sawn from the log rather than on the log size. The green lumber volume is calculated with the average rough green dimensions. The sawdust volume is predicted using board feet of lumber and piece count as independent variables. The chip volume is the difference between the log volume and the lumber and sawdust volumes. The shaving volume is calculated for each board by reducing its rough, green volume for shrinkage and subtracting its dry dressed volume.

A density distribution function is used to convert the volumes of the green residues to weights. The function is divided into nine distributions based on butt or upper log and diameter class. The models use the log data to determine which distribution to use and a random number generator to select the density value from that distribution. The density data are based on data collected at sawmills in east Texas. Shaving density was assumed to be 37 pounds per cubic foot.

SAMTAM II uses reduction factors for changing bark weight and green residue weights. The reduction factors are based on data collected from trees in the West Gulf Region that have been dead for periods of up to 6 months.

The models assign a dollar value to the lumber, based on its size and grade, and to the residues based on their weights. Current market prices are put in the models, dollar values are summed by log, and the profit or loss incurred in processing a log is determined by subtracting log cost and processing cost from the total log value. The models also provide smoothed estimates of profit or loss for each log size, grade, and kill class.

The SAMTAM models are available in FORTRAN for larger computers and Applesoft for Apple II microcomputers. Copies of the program and a user's manual may be obtained without charge by sending a blank diskette with your request to Ms. Nona B. Huckabee, Forest Pest Management Staff, USDA Forest Service 1720 Peachtree Road, NW, Atlanta, GA 30367.

For information regarding technical contents or interpretation of results, contact Dr. David W. Patterson, Division of Forestry, West Virginia University, Morgantown, WV 36506 (telephone 304/293-2941) or Robert W. Westbrook, Primary Processing Specialist, Southern Region - S&PF, USDA Forest Service, 2500 Shreveport Highway, Pineville, LA 71360 (telephone 318/473-7272).

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